ters that depend on some other relation in the germ cells than that brought about by the shifting of the chromosomes in the reduction division to produce 'pure' gametes.

Ziegler's failure to give a satisfactory account of sex determination on the *differential* chromosome basis raises the wider question as to whether at the present time we are really obliged to look in this direction for a solution of the question. The known facts in regard to sex indicate that we have to deal with two sharply contrasted, yet interchangeable states. Furthermore, the facts seem to indicate that some internal mechanism exists that gives with great precision the one or the other condition. We lack completely at present the necessary knowledge of the chemistry of the cell on which alone we can hope to establish a real theory of sex determination. It might be possible indeed to invent a purely fictitious, *quasi* chemical, hypothesis, such, for instance, as assuming that the female and the male represent two contrasted conditions of the same protoplasm, one state being a combined (the female) and the other a separated (male) condition of the aggregate bodies (molecules) of which the protoplasm is composed. While we might, were it worth while, work out this or some similar idea into a more or less consistent hypothesis, the only value that such a conception might have at present would be to indicate that sex determination may not be the result of differential *nuclear* divisions that locate sex determining chromosomes in different cells, but that the process is chemical rather than morphological.

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THE SARGASSO FISH NOT A NEST-MAKER.

EVER since 1872 the sargasso fish (*Pterophryne histrio*) has been famous as the builder of a remarkable globular nest made of the sargasso weed, in the midst of which it finds a congenial home. Professor Louis Agassiz first described such nests observed by him in December, 1871, during a voyage to Brazil and attributed them to the Antennariid. No one has since doubted the accuracy of the identification, and in innumerable works it has been accepted as well established. A few weeks ago, however, Dr. Hugh Smith, deputy fish commissioner, informed me that he had obtained eggs laid by the sargasso fish and, on a visit to his office, he showed me some under a microscope, and I was surprised to find that they were quite different from those found in connection with the nests and which had been elaborately described by Vaillant and Möbius. Later I received a letter from Professor E. W. Gudger, of the State Normal College of North Carolina, containing an account of the pterophryne's oviposition. This corresponds remarkably with that practised by the fish's distant relative, the angler (*Lophius piscatorius*). The elaborate provision thus made specially for the eggs, as well as the absence of polar filaments, negatives the attribution of such eggs to the nest-maker of the sargasso sea and leaves the question of the real maker an unsolved problem. Similar eggs were found free on the surface of the sea off the African coast and noticed by Cunningham (1887) but not identified. Can such be the product of a flying-fish?

The fish, whatever it may be, is probably not a direct maker of the nest but the filaments of the eggs may, perhaps, become mechanically entangled with the fronds as well as with each other and the contraction into a subglobular mass may be the result.

Professor Gudger's communication is herewith submitted.

THEO. GILL.

A NOTE ON THE EGGS AND EGG-LAYING OF PTEROPHRYNE HISTRIO, THE GULFWEED FISH.

SPECIMENS of the gulfweed fish occasionally drift with the *Sargassum* into the harbor of Beaufort, N. C., and are picked up along the beach by boys and brought to the laboratory of the United States Bureau of Fisheries.

When I reached the laboratory about the middle of June, 1903, there were two of these interesting fishes confined in an aquarium of running salt water. These were put in my care and on one of them and its eggs the following observations were made. The two fishes were of unequal size and were contin-